REMARKS

Claims 1-19 are pending in the present application with claims 12-19 withdrawn in response to a restriction requirement. With entry of this Amendment, Applicants hereby amend claims 1, 2, 4, 6, 7, 9 and 10, cancel claims 3, 5 and 12-19 without prejudice and add new claim 20. Reexamination and reconsideration are respectfully requested.

The present invention is directed to a liquid treatment apparatus. The apparatus comprises a plurality of process liquid supply nozzles disposed in a process bath to process objects. The plurality of process liquid supply nozzles include a first pair of nozzles arranged at the same level on both sides of the objects and a second pair of nozzles arranged at a different level. Each nozzle has a discharge port directed toward the objects. This is advantageous as it allows for a uniform treatment. Also, the plurality of nozzles – *e.g.*, the first and second pairs – are connected to a common process liquid supply source.

Applicants have amended independent claim 1 in a number of ways, including to recite: "a plurality of process liquid supply nozzles disposed in the process bath and connected to a common process liquid supply source, the plurality of process liquid supply nozzles including: a pair of first process liquid supply nozzles arranged at the same level on both sides of the process objects in the process bath, each of the first process liquid supply nozzles having a discharge port directed toward the process objects contained in the process bath; and a pair of second process liquid supply nozzles arranged at the same level on both sides of the process objects in the process bath, each of the second process liquid supply nozzles having a discharge port directed toward the process objects contained in the process bath, and the second process liquid supply nozzles being located at a level different from that of the first process liquid supply nozzles . . . ."

Support for this amendment is found throughout the specification and drawings. For example, Fig. 1 illustrates pairs of process liquid supply nozzles 11R/L, 12R/L and so on. The nozzles in each pair are arranged on the same level, but the pairs are at different levels. Fig. 1 also shows the plurality of process liquid supply nozzles – *e.g.*, pairs 11R/L and 12R/L – are connected

to a common process liquid supply source via process liquid supply line 4. Figs. 2 and 3 illustrate that the nozzles 10 have discharge ports directed toward the process objects. As discussed below, none of the references cited by the Examiner to reject the claims discloses the recitations quoted above.

Claims 2, 4 and 6-10 have also been amended in view of the amendments to claim 1 and to better claim the invention.

Toshima '008

The Examiner rejected claims 1-11 under 35 U.S.C. § 102(b) as being anticipated by Toshima et al. (U.S. Patent Pub. No. 2002/0045008).

Toshima '008 is directed to a substrate processing apparatus employing ozone gas and steam to process the wafers. Fig. 2 illustrates the processing vessel 10 of the apparatus. The apparatus has a steam feed means 30 ending in a steam nozzle 35 in the processing vessel 10. (*See also* paragraphs 0039 and 0045.) The apparatus has an ozone gas feed means 40 ending in an ozone gas nozzle 43 in the processing vessel 10. (*See also* paragraph 0047.) The apparatus has an air feed means 70 ending in a pair of nozzles 74 for discharging air into the processing vessel 10. (*See also* paragraph 0050.) Thus, Fig. 3 illustrates that the apparatus has two pairs of nozzles – 35/43 and 74/74. The two pairs of nozzles are, however, not connected to a common process liquid supply source as recited in claim 1. Pair 74/74 is connected to an air source while the nozzles of pair 35/43 are connected to other sources, *i.e.*, ozone and steam means. Thus, claim 1 is not anticipated by Toshima '008 for at least this reason.

Furthermore, Toshima '008 is directed to processing substrates using vapor and gas as opposed to liquid in the claimed invention. The Examiner has acknowledged this deficiency of Toshima '008, but contends that the type of fluid is "a matter of intended use where all the nozzles mentioned [in Toshima '008] are inherently capable of supplying a liquid . . . ." Applicants respectfully disagree. There are structural differences between nozzles which are configured to

discharge liquid, on the one hand, and nozzles for handling vapor and gas. Thus, a claim directed to a liquid treatment apparatus t and having "liquid supply nozzles" recites structure – not just intended use – different from the apparatus in Toshima '008 and should be given weight. Accordingly, Applicants respectfully submit that claim 1 is not anticipated by Toshima '008 for at least this reason as well.

For at least the reasons set forth above, dependent claims 2, 4 and 6-11 are not anticipated by Toshima '008.

Toshima '692

Claims 1-8 and 11 were rejected under 35 USC § 103(a) as being anticipated by Toshima et al. It is unclear from the Office Action which Toshima et al. the Examiner is citing to reject the claims. Because the Examiner referenced U.S. Patent No. 6,613,692 to Toshima et al. in other rejections, it is believed that the Examiner is relying on this patent.

Toshima '692 is deficient for the same reasons as Toshima '008. Figs. 9, 11, 12, 16 and 17 cited by the Examiner illustrate a processing vessel with two pairs of nozzles. However, as is clear in each of these figures, the two pairs are not connected to a common liquid supply source. Figs. 1 and 6 illustrate nozzles 26 and 27, but Col. 5, lines 49-54 of Toshima '692 explains that the sources for these nozzles are pure water and Nitrogen respectively. Thus, claim 1 is not anticipated by Toshima '692 for at least this reason.

As with Toshima '008, the Examiner contends that nozzles of Toshima '692 meet the nozzle recitations of claim 1 even though they supply gas. There are structural differences between gas and liquid nozzles that further distinguish claim 1 from Toshima '692 as discussed above.

For at least the reasons set forth above, dependent claims 2, 4 and 6-11 are not anticipated by Toshima '692.

Mitsuo and Pozniak

Claims 1-8 and 11 were also rejected under 35 U.S.C. § 103(a) as being unpatentable over Mitsuo (JP Pub. No. 10-229065) in view of Pozniak et al. (U.S. Patent Pub. No. 2002/00207714).

Mitsuo discloses a cleaning bath 10. The bath has a pair of cleaning liquid supply pipes 3 and 11 as seen in Fig. 1(b). Each pipe has discharge ports 7R/L and 14R/L for discharging liquids. As is clearly seen in Figs. 2, 5 and 8, the discharge ports are not directed toward the substrate. In contrast, claim 1 recites that the discharge ports of the nozzles are "directed toward the process objects contained in the process bath."

Pozniak does not make up for the deficiencies of Mitsuo as it was merely cited for its disclosure of valves and sequential controller.

Accordingly, claim 1 is patentable over Mitsuo and Pozniak. For at least the reasons set forth above, dependent claims 2, 4 and 6-8 and 11 are likewise patentable over Mitsuo and Pozniak.

Mitsuo/Toshima '692 and Pozniak and Toshima '008

Claims 9 and 10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Toshima '692 or Mitsuo in view of Pozniak and further in view of Toshima '008. Claim 9 recites "the common process liquid supply source includes a chemical liquid supply source and a rinse liquid supply source" and "a chemical liquid supply line connected to the chemical liquid supply source merges into a process liquid supply line, which connects the rinse liquid supply source to the process liquid supply nozzles." As discussed above, Toshima '008 and '692 fail to disclose a common process liquid supply source as recited and Pozniak was directed to valves and sequential controllers. In the Office Action, the Examiner did not explain how Mitsuo discloses the above recitations. Applicants respectfully request that the Examiner point out where these recitations are found in Mitsuo.

New claim 20

Applicant has added new claim 20 depending from claim 1. For at least the reasons set forth above with respect to claim 1, claim 20 is believed to be in condition for allowance.

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, Applicants petition for any required relief including extensions of time and authorize the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing Docket No. 199372005500.

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Respectfully submitted,

By_____

Mehran Arjomand
Registration No.: 48,231
MORRISON & FOERSTER LLP
555 West Fifth Street, Suite 3500
Los Angeles, California 90013
(213) 892-5630